

Original Article

Stroke awareness among community health workers from rural health blocks of Thiruvananthapuram, India

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ABSTRACT

Objectives: Secondary prevention of stroke largely depends on risk factor control and lifestyle modification. Optimal secondary prevention strategies are limited in rural settings due to the shortage of primary care physicians and neurologists. Awareness of community health workers (CHWs) regarding stroke and its management remains largely unexplored. The current cross-sectional study aimed at assessing the knowledge, attitude, and practice (KAP) of CHWs regarding stroke care.

Materials and Methods: A structured KAP questionnaire was administered among 510 CHWs from randomly selected rural health blocks of Thiruvananthapuram, Kerala, India.

Results: Knowledge assessment showed that the CHWs possessed an average knowledge of stroke care. The mean attitude and practice scores were higher, indicating a favorable attitude and good practice. The overall mean (standard deviation) KAP scores of CHWs were 13.54 (4.43) against a total score of 23. The KAP scores were highest among palliative care nurses. The stroke awareness of the accredited social health activists was comparatively lower than other CHWs. Factors such as age and years of work experience were not correlated to the KAP scores.

Conclusion: Recurrent strokes remain a major challenge in primary care. Overall, the health workers demonstrated average knowledge, favorable attitudes, and positive practices. The study highlights the importance of training accredited social health activists (ASHAs) and other CHWs in stroke to improve secondary prevention strategies.

Keywords: Stroke care, Knowledge, Attitude, Practices, Community health worker

INTRODUCTION

It is estimated that around 80% of stroke survivors live in rural areas.^[1] Studies conducted across India show a higher prevalence of vascular risk factors among the rural population.^[2-4] Despite being a significant cause of long-term morbidity, stroke survivors are at high risk of developing recurrent stroke, cardiovascular disorders, and mortality.^[5] Successful secondary prevention in stroke largely depends on risk factor control, pharmacological management, adherence to treatment, patient education, and lifestyle modifications.^[6,7] However, optimal post-stroke care and secondary prevention strategies are limited in rural settings due to multiple factors such as shortage of primary care physicians and neurologists, limited access to health services, sociocultural factors, and financial barriers.^[1,2,8] Among these factors, the lack of

physicians and neurologists is of utmost concern as only 34% of the doctors cater to the rural population in India.^[9]

To address the challenges and to enhance primary care, emerging health systems utilize a task-shifting approach using community health workers (CHWs). Task shifting interventions highly depend on the competencies of the care providers.^[10] Successful implementation of secondary prevention strategies would only be possible with a highly informed team of health workers. However, the awareness of CHWs regarding the stroke and its management remains largely unexplored. The knowledge, attitude, and practice (KAP) of CHWs will directly or indirectly affect the quality of care provided to the communities. Therefore, the aim of the present study was to assess the KAP of rural CHWs regarding stroke care. The study was conducted as a baseline

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Received: 23 April 2023 Accepted: 01 September 2023 Epub Ahead of Print: 28 September 2023 Published: 10 November 2023 DOI: 10.25259/JNRP_222_2023

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survey for a community-based capacity-building program of CHW for stroke prevention.

MATERIALS AND METHODS

Study participants, sampling, and setting

The study adopted a descriptive cross-sectional research design. The study participants were CHWs from rural health blocks of Thiruvananthapuram district of Kerala, India. In this study, CHWs refer to the group of health workers, including accredited social health activist (ASHA), palliative care nurses (PCN), junior public health nurses (JPHN), junior health inspectors (JHI), and health supervisors (HS). The designations of JPHN and JHI are specific to the state of Kerala. JPHNs are the equivalent of auxiliary nurse midwife and JHIs are the equivalent of the male-multipurpose health workers in other parts of India. The Thiruvananthapuram district consists of 23 health blocks, of which 16 are rural health blocks, and seven are urban health blocks. Out of the 16 rural blocks, eight were randomly selected using the lottery method. The CHWs from the public healthcare establishments of the selected rural blocks were invited to participate in the study. The data from the participants were collected by the research assistants. The geographical distribution of the study settings is shown in Figure 1.

Ethical considerations

The study was approved by the Institutional Ethics Committee. Necessary administrative permissions were obtained from the Directorate of Health Services, Government of Kerala. Written informed consent was obtained from the participants before the data collection.

Data collection questionnaire

We used a structured self-administered questionnaire, which had two sections. The first section evaluated the

sociodemographic characteristic of the participants and had seven items. The second section was designed to assess the KAP of healthcare workers regarding stroke. The questionnaire had 23 multiple-choice response items with 17 items on knowledge and three items each for attitude and practice. The overall KAP score was calculated by adding individual item scores. The overall KAP scores ranged from 0 to 23, with higher scores representing better knowledge, favorable attitudes, and practices. The items under the knowledge domain evaluated the knowledge related to etiology, risk factors, warning signs, management, and rehabilitation of stroke. Attitude was measured by items focusing on prevention, risk factors, and complications. Management of patients after stroke was the focus of practice-oriented questions. The KAP questionnaire was developed by the research team and the content validity was established by an expert panel of neurologists, neuroscience nurses, and stroke physicians (Scale content validity index = 1). The reliability score of the scale was evaluated using the internal consistency measure Cronbach's alpha ($\alpha = 0.80$) and was found acceptable. The tool was subjected to pretesting and piloting to ensure the feasibility of using it in a larger population.

Statistical analysis

Data collected were coded and were analyzed using the Statistical Package for the Social Sciences (SPSS Version 15.0; SPSS Inc., Chicago, Illinois, USA). The demographic characteristics of the participants were expressed as measures of frequency and percentage. To determine the relationship between the variables, the Pearson correlation coefficient was estimated. Based on the findings of the study, the researchers undertook a large-scale capacity-building project on stroke care.

RESULTS

A total of 510 CHWs participated in the study (accredited social health activist, $n = 334$; JPHN/JHI $n = 161$; PCN, $n = 9$; and HS,

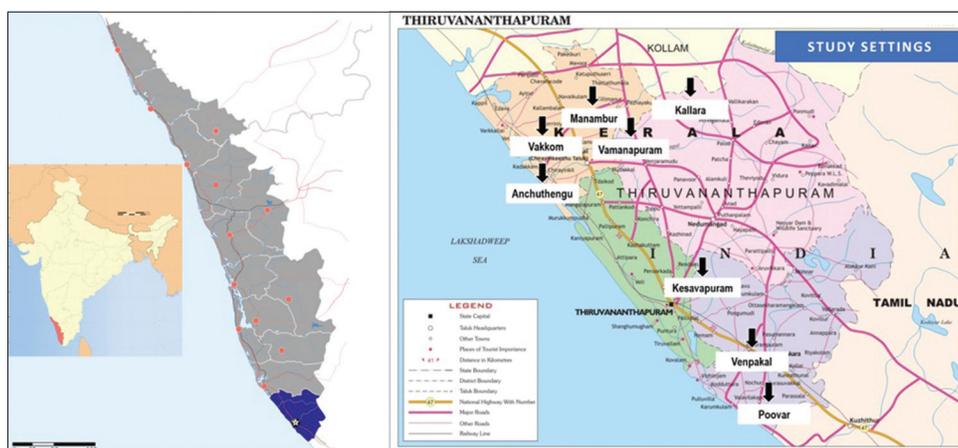


Figure 1: Study settings.

$n = 6$). Among all, 46.3% of participants were in the category of age 47–56 years, with the majority being females (94.1%) and with higher secondary education (42.4%). The characteristics of the study participants are presented in Table 1.

KAP scores

Knowledge assessment showed that the CHWs possessed only an average knowledge of stroke care ([mean \pm standard deviation, SD] = 9.66 ± 3.860 against a total score of 17). The mean attitude scores were 2.57 (0.65), indicating a positive attitude of CHWs regarding the management and treatment of stroke. The mean (SD) practice scores were 1.50 (0.54) with a maximum score of 3. The overall mean (SD) KAP scores of CHWs were 13.54 (4.43) over a total score of 23 [Table 2]. The PCN demonstrated a high knowledge score (Mean [SD]:15 [2.29]) followed by the HS (Mean [SD]: 13.50 [3.45]). The overall KAP scores were also highest among PCN, followed by HS, JPHNs, and ASHAs.

Detailed analysis of knowledge scores showed that the majority of the CHWs identified cerebral ischemia as

one of the causes of stroke. Age, body mass index, family history, and uncontrolled blood pressure were identified as risk factors for stroke by more than half of the CHWs. It was noteworthy to understand that only a small portion of the CHWs (28–29%) were aware of the warning signs of a stroke, such as facial drooping, arm weakness, and speech difficulties. More than half (56.1%) of the participants failed to correctly answer the time window for tissue plasminogen activator administration. Even though the CHWs possessed moderate knowledge regarding a balanced diet (77.1%) and prevention of aspiration (70.8%), knowledge regarding shoulder care was poor (32%). The area-wise knowledge scores of CHWs regarding stroke are presented in Table 3.

Pearson correlation coefficient was calculated to find the relationship between KAP; however, correlation r -values were <0.3 ($P < 0.05$). Similarly, the relationship between the KAP and the demographic characteristics of the participants was also examined. Age and years of experience when analyzed with knowledge, attitude, and practice, and overall, KAP scores yielded r -values <0.3 ($P < 0.05$). Correlation analyses were primarily interpreted based on r -values which denote the strength of correlation. Since the r -coefficients were <0.3 , it was interpreted as negligible or no correlation.^[11] The associated P values were < 0.05 indicating that the no-correlation was significant.^[11]

DISCUSSION

Globally, less attention has been given to the role nurses, and other CHWs play in community-based stroke care.^[12] This is one of the initial studies which evaluated the awareness of stroke among CHWs. Knowledge of CHWs was found to be better in areas of etiology and identification of risk factors. These findings are similar to the study conducted by Akinyemi *et al.*^[13] where the knowledge regarding etiology and risk factors was found to be better among hospital staff. The findings of the study are also in line with the survey of health workers toward stroke care by Byfield.^[14] The study found that only 58% of the health professionals had met the acceptable knowledge range but demonstrated an excellent attitude toward stroke care. Although a strong correlation between knowledge and practice was found by Byfield, we could not find a relationship between the KAP of CHWs.^[14] This might be due to the variability in the study population with respect to the job cadre and education levels.

In addition to basic nursing education, PCN are trained to manage chronic illnesses such as stroke, cancer, diabetes, and cardiovascular diseases.^[15] This additional training would have resulted in better awareness of stroke care among PCN. Hence, it is meaningful to consider capacity-building strategies by regular training programs that can improve stroke care. Nurse-led hospital-to-home transition of care interventions were found to improve

Table 1: Sociodemographic characteristics of participants ($n=510$).

Demographic characteristics	Frequency	Percentage
Age in years		
26–36	49	9.6
37–46	225	44.1
47–56	236	46.3
Gender		
Female	480	94.1
Male	30	5.9
Education		
Less than SSLC	177	34.7
Pre-degree/10+2	216	42.4
Graduate	68	13.3
Professional graduate	41	8
Postgraduate	8	1.6
Cadre of work		
ASHA	334	65.5
Junior public health nurse/ junior health inspector	161	31.6
Palliative care nurses	9	1.8
Health supervisors	6	1.2
Years of experience		
1–10 years	346	67.8
11–20 years	124	24.3
21–30 years	36	7.1
31–40 years	4	0.8
Previous training in stroke care		
Yes	160	31.4
No	350	68.6
History of caring for a patient with a stroke		
Yes	475	93.1
No	35	6.9

Table 2: Mean (SD) scores of KAP regarding stroke ($n=510$).

	<u>Knowledge</u>	<u>Attitude</u>	<u>Practice</u>	<u>Overall KAP</u>
	<u>0-17</u>	<u>0-3</u>	<u>0-3</u>	<u>0-23</u>
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
ASHA	7.64 (2.53)	2.46 (0.72)	1.18 (0.72)	11.28 (3.11)
JPHN/JHI	13.43 (2.91)	2.78 (0.45)	1.54 (0.75)	17.75 (3.20)
PCN	15 (2.29)	2.56 (0.52)	1.89 (0.60)	19.44 (2.55)
HS	13.50 (3.45)	2.83 (0.40)	1.50 (0.54)	17.83 (3.60)
CHW overall	9.66 (3.86)	2.57 (0.65)	1.31 (0.75)	13.54 (4.43)

KAP: Knowledge, attitude, and practice, SD: Standard deviation, JPHN: Junior public health nurse, JHI: Junior health inspectors, PCN: Palliative care nurses, HS: Health supervisors, CHW: Community health worker

Table 3: Area-wise knowledge scores of CHWs regarding stroke ($n=510$).

S. No.	Knowledge of stroke	Incorrect response		Correct response	
		<i>n</i>	%	<i>n</i>	%
1.	Etiology – Ischemia	69	13.5	441	86.5
2.	Etiology – Uncontrolled BP	236	46.3	274	53.7
3.	Risk factor – Age	126	24.7	384	75.3
4.	Risk factor – Body mass index	248	48.6	262	51.4
5.	Risk factor – Family history	105	20.6	405	79.4
6.	Warning signs – Arm weakness	360	70.6	150	29.4
7.	Warning signs – Facial drooping	361	70.8	149	29.2
8.	Warning signs – Speech difficulties	362	71	148	29
9.	Warning signs – Time	367	72	143	28
10.	Warning Sign – Others	87	17.1	423	82.9
11.	Management of stroke – Time window for tPA	286	56.1	224	43.9
12.	Secondary prevention – Diabetes control	189	37.1	321	62.9
13.	Secondary prevention – Lipid-lowering therapy	289	56.7	221	43.3
14.	Secondary prevention – Anticoagulants	43	8.4	467	91.6
15.	Rehabilitation – Balanced diet	117	22.9	393	77.1
16.	Rehabilitation – Prevention of aspiration	149	29.2	361	70.8
17.	Rehabilitation – Shoulder support	347	68	163	32

CHWs: Community health workers, tPA: Tissue plasminogen activator

adherence, physical function, and risk reduction among stroke survivors.^[16] A recent systematic review found that community-based interventions by nurses and CHWs are effective in stroke risk reduction, medication adherence, post-stroke behavioral symptoms, and stroke-related self-efficacy.^[12]

Overall, our study shows average knowledge, favorable attitudes, and positive practices of stroke care among rural CHWs. This might have been due to several factors. In 2010, the government of India launched the “National Program for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases, and Stroke.” Ongoing activities of the program focus on improving infrastructure, capacity building, health promotion, early diagnosis, treatment, and referral. This could have positively influenced the study results.^[17] The factors such as high literacy rate, high female literacy, and structured primary health-care system of Kerala could have influenced the better scores.^[18]

The stroke awareness of the ASHAs was comparatively lower than other CHWs. A recent study found that a short-term training program for ASHA workers could significantly improve the knowledge of stroke from 58.7% at baseline to 84.4% during the 6-month follow-up.^[19] Another cluster-randomized trial found that a 5-day workshop for ASHA workers significantly improved the mean knowledge scores of hypertension management.^[20] These studies unequivocally support the usefulness of capacity-building interventions.

There are certain limitations to our study. Due to the robust primary care network and high health literacy in the state of Kerala, the findings of our study may not be generalizable to the whole country.^[21] The data on practice and attitude were mainly self-reported, and hence, they might be subject to desirability bias. Due to the nature of the questionnaire-based survey, the findings on knowledge, attitude, and practice are limited to the scope of items covered in KAP questionnaire.

The study included an unprecedented data set of 510 CHWs from rural health blocks of Thiruvananthapuram, Kerala, and is the first of its kind to evaluate the awareness of CHWs on a large scale. A further strength of the study was the inclusion of diverse groups of CHWs, which enabled us to compare the awareness among various health workers.

CONCLUSION

Recurrent strokes remain a major challenge in primary care. Overall, the health workers demonstrated average knowledge, favorable attitudes, and positive practices. Utilizing the services of nurses and CHWs could be a cost-effective, meaningful strategy to reduce the burden of recurrent stroke, especially in developing countries. The study highlights the importance of training ASHAs and other CHWs in stroke to improve secondary prevention strategies. The CHWs could play a pivotal role in secondary prevention of stroke by educating the public about stroke, addressing vascular risk factor control, liaising with stroke care centers, and ensuring follow-up of individuals with stroke. Educating the CHWs is a pragmatic and cost-effective strategy that could have a substantial public health impact for both developing and developed countries.

Acknowledgment

The authors would like to acknowledge the Department of Health and Family Welfare, Government of Kerala, for providing financial support for the study. We express our sincere thanks to the community health workers for participating in this study.

Declaration of patient consent

The Institutional Review Board (IRB) permission obtained for the study.

Financial support and sponsorship

Department of health and family welfare, Government of Kerala.

Conflicts of interest

There are no conflicts of interest.

Use of artificial intelligence (AI)-assisted technology for manuscript preparation

The authors confirm that there was no use of artificial intelligence (AI)-assisted technology for assisting in the writing or editing of the manuscript and no images were manipulated using AI.

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How to cite this article: Renjith V, Soman B, Shanmughasundaram S, Arun K, Jeemon P, Antony R, *et al.* Stroke awareness among community health workers from rural health blocks of Thiruvananthapuram, India. *J Neurosci Rural Pract* 2023;14:735-40.